



**BOURNS®**

**Features**

- Radial Leaded Devices
- Cured, flame retardant epoxy polymer insulating material meets UL 94V-0 requirements
- Agency recognition:   
- RoHS compliant\*

 The MF-RX Series is currently available, although not recommended for new designs. The higher voltage rated **MF-RX/72 Series** is preferred.

**MF-RX Series - PTC Resettable Fuses**

**Electrical Characteristics**

| Model    | V max. Volts | I max. Amps | I <sub>hold</sub> | I <sub>trip</sub> | Initial Resistance |      | 1 Hour (R <sub>1</sub> ) Post-Trip Resistance | Max. Time to Trip |                  | Tripped Power Dissipation |
|----------|--------------|-------------|-------------------|-------------------|--------------------|------|---|-------------------|------------------|---------------------------|
|          |              |             | Amperes at 23 °C  |                   | Ohms at 23 °C      |      | Ohms at 23 °C                                 | Amperes at 23 °C  | Seconds at 23 °C | Watts at 23 °C            |
|          |              |             | Hold              | Trip              | Min.               | Max. | Max.  |                   |                  | Typ.                      |
| MF-RX110 | 60           | 40          | 1.10              | 2.20              | 0.15               | 0.25 | 0.38  | 5.5               | 8.2              | 1.50                      |
| MF-RX135 | 60           | 40          | 1.35              | 2.70              | 0.12               | 0.19 | 0.30  | 6.75              | 9.6              | 1.70                      |
| MF-RX160 | 60           | 40          | 1.60              | 3.20              | 0.09               | 0.14 | 0.22  | 8.0               | 11.4             | 1.90                      |
| MF-RX185 | 60           | 40          | 1.85              | 3.70              | 0.08               | 0.12 | 0.19  | 9.25              | 12.6             | 2.10                      |
| MF-RX250 | 60           | 40          | 2.50              | 5.00              | 0.05               | 0.08 | 0.13  | 12.5              | 15.6             | 2.50                      |
| MF-RX300 | 60           | 40          | 3.00              | 6.00              | 0.04               | 0.06 | 0.10  | 15.0              | 19.8             | 2.80                      |
| MF-RX375 | 60           | 40          | 3.75              | 7.50              | 0.03               | 0.05 | 0.08  | 18.75             | 24.0             | 3.20                      |

**Environmental Characteristics**

Operating/Storage Temperature..... -40 °C to +85 °C  
 Maximum Device Surface Temperature in Tripped State..... 125 °C  
 Passive Aging..... +85 °C, 1000 hours..... ±5 % typical resistance change  
 Humidity Aging..... +85 °C, 85 % R.H. 1000 hours..... ±5 % typical resistance change  
 Thermal Shock..... -40 °C to +85 °C, 10 times..... ±10 % typical resistance change  
 Solvent Resistance..... MIL-STD-202, Method 215..... No change  
 Vibration..... MIL-STD-883C, Method 2007.1,..... No change  
 Condition A

**Test Procedures And Requirements For Model MF-RX Series**

| Test                 | Test Conditions   | Accept/Reject Criteria                  |
|----------------------|---|---|
| Visual/Mech.....     | Verify dimensions and materials.....                      | Per MF physical description             |
| Resistance.....      | In still air @ 23 °C.....                                 | R <sub>min</sub> ≤ R ≤ R <sub>max</sub> |
| Time to Trip.....    | 5 times I <sub>hold</sub> , V <sub>max</sub> , 23 °C..... | T ≤ max. time to trip (seconds)         |
| Hold Current.....    | 30 min. at I <sub>hold</sub> .....                        | No trip                                 |
| Trip Cycle Life..... | V <sub>max</sub> , I <sub>max</sub> , 100 cycles.....     | No arcing or burning                    |
| Trip Endurance.....  | V <sub>max</sub> , 48 hours.....                          | No arcing or burning                    |

UL File Number ..... E 174545S  
 CSA File Number..... CA 110338  
 TÜV File Number ..... R2057213

**Thermal Derating Chart - I<sub>hold</sub> / I<sub>trip</sub> (Amps)**

| Model    | Ambient Operating Temperature |             |             |             |             |             |             |             |             |
|----------|-------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|          | -40 °C                        | -20 °C      | 0 °C        | 23 °C       | 40 °C       | 50 °C       | 60 °C       | 70 °C       | 85 °C       |
| MF-RX110 | 1.71 / 3.42                   | 1.50 / 3.00 | 1.31 / 2.62 | 1.10 / 2.20 | 0.89 / 1.78 | 0.79 / 1.58 | 0.69 / 1.38 | 0.59 / 1.18 | 0.44 / 0.88 |
| MF-RX135 | 2.09 / 4.18                   | 1.84 / 3.68 | 1.61 / 3.22 | 1.35 / 2.70 | 1.09 / 2.18 | 0.97 / 1.94 | 0.85 / 1.70 | 0.73 / 1.46 | 0.54 / 1.08 |
| MF-RX160 | 2.48 / 4.96                   | 2.18 / 4.36 | 1.90 / 3.80 | 1.60 / 3.20 | 1.30 / 2.60 | 1.15 / 2.30 | 1.01 / 2.02 | 0.86 / 1.72 | 0.64 / 1.28 |
| MF-RX185 | 2.87 / 5.74                   | 2.52 / 5.04 | 2.20 / 4.40 | 1.85 / 3.70 | 1.50 / 3.00 | 1.33 / 2.66 | 1.17 / 2.34 | 1.00 / 2.00 | 0.74 / 1.48 |
| MF-RX250 | 3.88 / 7.76                   | 3.40 / 6.80 | 2.98 / 5.96 | 2.50 / 5.00 | 2.03 / 4.06 | 1.80 / 3.60 | 1.58 / 3.16 | 1.35 / 2.70 | 1.00 / 2.00 |
| MF-RX300 | 4.65 / 9.30                   | 4.08 / 8.16 | 3.57 / 7.14 | 3.00 / 6.00 | 2.43 / 4.86 | 2.16 / 4.32 | 1.89 / 3.78 | 1.62 / 3.24 | 1.20 / 2.40 |
| MF-RX375 | 5.81 / 11.6                   | 5.10 / 10.2 | 4.46 / 8.92 | 3.75 / 7.50 | 3.04 / 6.08 | 2.70 / 5.40 | 2.36 / 4.72 | 2.03 / 4.06 | 1.50 / 3.00 |

\*RoHS Directive 2002/95/EC Jan 27, 2003 including Annex.  
 Specifications are subject to change without notice.  
 Customers should verify actual device performance in their specific applications.

## Additional Features

- Bulk packaging, tape and reel and Ammo-Pak available on most models
- Resettable circuit protection

## Applications

Almost anywhere there is a low voltage power supply, up to 60 V and a load to be protected, including:

- Security and fire alarm systems
- Loud speakers
- Power transformers

# MF-RX Series - PTC Resettable Fuses

# BOURNS®

### Product Dimensions

| Model    | A<br>Max.       | B<br>Max.       | C               |                | D<br>Min.      | E<br>Max.      | Physical Characteristics |                 |          |
|----------|-----------------|-----------------|-----------------|----------------|----------------|----------------|--------------------------|-----------------|----------|
|          |                 |                 | Nom.            | Tol. ±         |                |                | Style                    | Lead Dia.       | Material |
| MF-RX110 | 13.0<br>(0.512) | 18.0<br>(0.709) | 5.1<br>(0.201)  | 0.7<br>(0.028) | 7.6<br>(0.299) | 3.1<br>(0.122) | 1                        | 0.81<br>(0.032) | Sn/Cu    |
| MF-RX135 | 14.5<br>(0.571) | 19.6<br>(0.772) | 5.1<br>(0.201)  | 0.7<br>(0.028) | 7.6<br>(0.299) | 3.1<br>(0.122) | 1                        | 0.81<br>(0.032) | Sn/Cu    |
| MF-RX160 | 16.3<br>(0.642) | 21.3<br>(0.839) | 5.1<br>(0.201)  | 0.7<br>(0.028) | 7.6<br>(0.299) | 3.1<br>(0.122) | 1                        | 0.81<br>(0.032) | Sn/Cu    |
| MF-RX185 | 17.8<br>(0.701) | 22.9<br>(0.902) | 5.1<br>(0.201)  | 0.7<br>(0.028) | 7.6<br>(0.299) | 3.1<br>(0.122) | 1                        | 0.81<br>(0.032) | Sn/Cu    |
| MF-RX250 | 21.3<br>(0.839) | 26.4<br>(1.039) | 10.2<br>(0.402) | 0.7<br>(0.028) | 7.6<br>(0.299) | 3.1<br>(0.122) | 1                        | 0.81<br>(0.032) | Sn/Cu    |
| MF-RX300 | 24.9<br>(0.980) | 30.0<br>(1.181) | 10.2<br>(0.402) | 0.7<br>(0.028) | 7.6<br>(0.299) | 3.1<br>(0.122) | 1                        | 0.81<br>(0.032) | Sn/Cu    |
| MF-RX375 | 28.4<br>(1.118) | 33.5<br>(1.319) | 10.2<br>(0.402) | 0.7<br>(0.028) | 7.6<br>(0.299) | 3.1<br>(0.122) | 1                        | 0.81<br>(0.032) | Sn/Cu    |

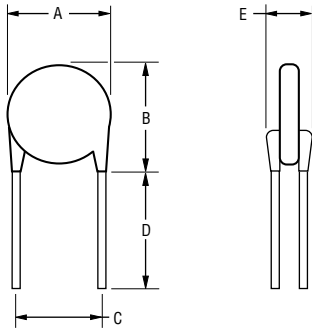
Packaging options:

BULK: All models = 500 pcs. per bag.

TAPE & REEL: MF-RX110 – MF-RX160 = 1500 pcs. per reel; MF-RX185 – MF-RX375 = 1000 pcs. per reel

AMMO-PACK: MF-RX110 – MF-RX160 = 1000 pcs. per reel; MF-RX185 – MF-RX375 = 500 pcs. per reel

0.81 (20AWG)



NOTE: Kinked lead option is available for board standoff. Contact factory for details.

### Typical Part Marking

Represents total content. Layout may vary.

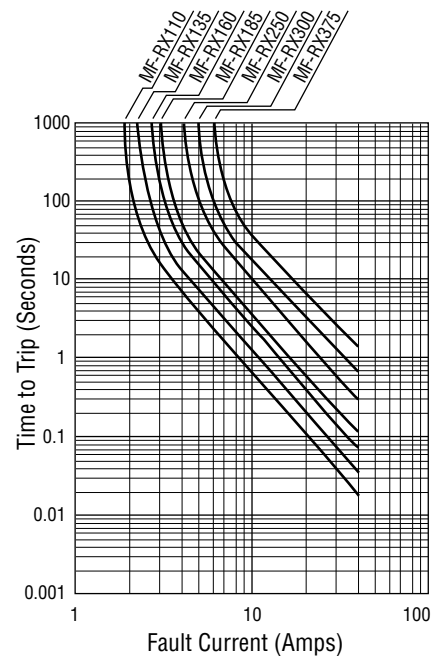


### How to Order

#### MF - RX 110 - 0 - 99

- Multifuse®  
Product Designator
- Series  
RX = Radial Leaded Component
- Hold Current, I<sub>hold</sub>  
110-375 (1.10 Amps - 3.75 Amps)
- Packaging Options
- = Bulk Packaging without part number suffix option
  - 0-99 = Bulk Packaging with part number suffix option
  - 2 = Tape and Reel without part number suffix option\*
  - 2-99 = Tape and Reel with part number suffix option\*
  - AP = Ammo-Pak\*
  - 0-14 = Kinked leads where straight leads are standard
  - 0-17 = Straight leads where kinked leads are standard
- Part Number Suffix Option
- 99 = As of date code April 1, 2005 all MF-RX models are RoHS compliant. The suffix "-99" can be used if a new part number is required to reference the RoHS compliance.
- Examples:
- MF-RX110 ..... Bulk packaging
  - MF-RX110-0-99 ..... Bulk packaging with part number suffix option
  - MF-RX110-2 ..... Tape and reel packaging
  - MF-RX110-2-99 ..... Tape and reel packaging with part number suffix option

### Typical Time to Trip at 23 °C



\*Packaged per EIA486-B

MF-RX SERIES, REV. M, 05/11

Specifications are subject to change without notice.  
Customers should verify actual device performance in their specific applications.

# MF-R, MF-R/90, MF-R/600, MF-RX, MF-RX/72 & MF-RX/250 Series Tape and Reel Specifications

**BOURNS®**

Devices taped using EIA468-B/IEC286-2 standards. See table below and Figures 1 and 2 for details.

| Dimension Description  | IEC Mark   | EIA Mark   | Dimensions             |                                    |
|--|------------|------------|------------------------|------------------------------------|
|  |            |            | Dimensions             | Tolerance                          |
| Carrier tape width   | $W$        | $W$        | $\frac{18}{(.709)}$    | $\frac{-0.5/+1.0}{(-0.02/+0.039)}$ |
| Hold down tape width   | $W_0$      | $W_4$      | $\frac{11}{(.433)}$    | min.                               |
| Hold down tape   |            |            | No protrusion          |                                    |
| Top distance between tape edges  | $W_2$      | $W_6$      | $\frac{3}{(.118)}$     | max.                               |
| Sprocket hole position   | $W_1$      | $W_5$      | $\frac{9}{(.354)}$     | $\frac{-0.5/+0.75}{(-0.02/+0.03)}$ |
| Sprocket hole diameter   | $D_0$      | $D_0$      | $\frac{4}{(.157)}$     | $\frac{\pm 0.2}{(\pm .0078)}$      |
| Abscissa to plane (straight lead)  | $H$        | $H$        | $\frac{18.5}{(.728)}$  | $\frac{\pm 3.0}{(\pm .118)}$       |
| Abscissa to plane (kinked lead)  | $H_0$      | $H_0$      | $\frac{16}{(.63)}$     | $\frac{\pm 0.5}{(\pm .02)}$        |
| Abscissa to top (straight lead)  | $H_1$      | $H_1$      | $\frac{38.0}{(1.496)}$ | max.                               |
| Abscissa to top (kinked lead)  | $H_1$      | $H_1$      | $\frac{32.2}{(1.268)}$ | max.                               |
| Overall width w/lead protrusion (straight lead)  |            | $C_1$      | $\frac{55.0}{(2.165)}$ | max.                               |
| Overall width w/lead protrusion (kinked lead)  |            | $C_1$      | $\frac{43.2}{(1.7)}$   | max.                               |
| Overall width w/o lead protrusion (straight lead)  |            | $C_2$      | $\frac{54.0}{(2.126)}$ | max.                               |
| Overall width w/o lead protrusion (kinked lead)  |            | $C_2$      | $\frac{42.5}{(1.673)}$ | max.                               |
| Lead protrusion  | $l_1$      | $L_1$      | $\frac{1.0}{(.039)}$   | max.                               |
| Protrusion of cutout   | $L$        | $L$        | $\frac{11}{(.433)}$    | max.                               |
| Protrusion beyond hold-down tape   | $l_2$      | $l_2$      | Not specified          |                                    |
| Sprocket hole pitch  | $P_0$      | $P_0$      | $\frac{12.7}{(0.5)}$   | $\frac{\pm 0.3}{(\pm .012)}$       |
| Pitch tolerance  |            |            | 20 consecutive         | $\frac{\pm 1}{(\pm .039)}$         |
| Device pitch: MF-R005–MF-R160, MF-R/90,<br>MF-RX110/72–MF-RX185/72                                   |            |            | $\frac{12.7}{(0.5)}$   | $\frac{\pm 0.3}{(\pm .012)}$       |
| Device pitch: MF-R185–MF-R400, MF-RX110–MF-RX375<br>MF-R/600, MF-RX250/72–MF-RX375/72                |            |            | $\frac{25.4}{(1.0)}$   | $\frac{\pm 0.6}{(\pm .024)}$       |
| Tape thickness   | $t$        | $t$        | $\frac{0.9}{(.035)}$   | max.                               |
| Tape thickness with splice: MF-R010–MF-R160,<br>MF-RX110/72–MF-RX185/72                              |            | $t_1$      | $\frac{1.5}{(.059)}$   | max.                               |
| Tape thickness with splice: MF-R250–MF-R1100,<br>MF-RX110–MF-RX375, MF-R/90, MF-RX250/72–MF-RX375/72 |            | $t_1$      | $\frac{2.3}{(.091)}$   | max.                               |
| Splice sprocket hole alignment   |            |            | 0                      | $\frac{\pm 0.3}{(\pm .012)}$       |
| Body lateral deviation   | $\Delta_h$ | $\Delta_h$ | 0                      | $\frac{\pm 1.0}{(\pm .039)}$       |
| Body tape plane deviation  | $\Delta_p$ | $\Delta_p$ | 0                      | $\frac{\pm 1.3}{(\pm .051)}$       |

Specifications are subject to change without notice.  
Customers should verify actual device performance in their specific applications.

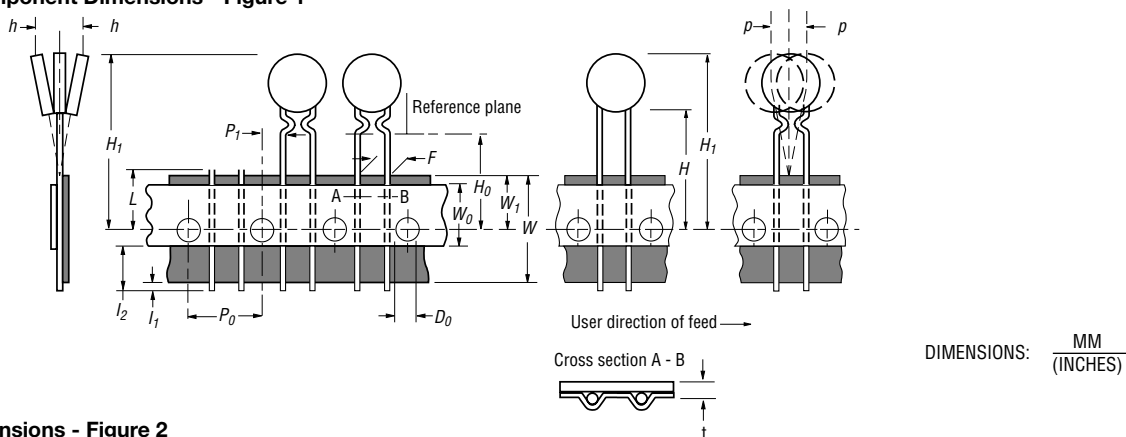
DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

# MF-R, MF-R/90, MF-R/600, MF-RX, MF-RX/72 & MF-RX/250 Series Tape and Reel Specifications

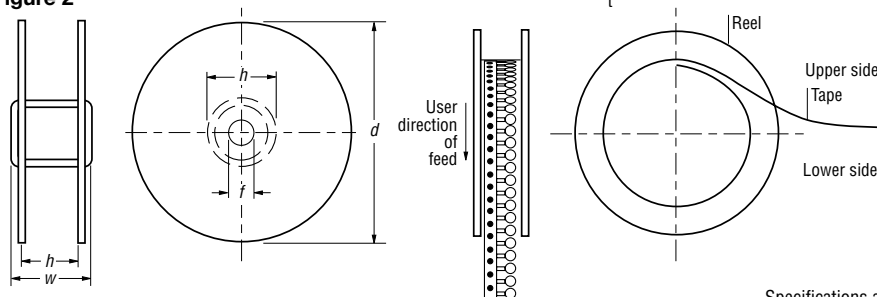
# BOURNS®

| Dimension Description                                  | IEC Mark       | EIA Mark       | Dimensions       |                             |                |      |
|--|----------------|----------------|------------------|-----------------------------|----------------|------|
|  |                |                | Dimensions       | Tolerance                   |                |      |
| Lead spacing: MF-R, MF-R/90, MF-R/600, MF-RX, MF-RX/72 | F              | F              | 5.08<br>(0.2)    | ±0.2<br>(±0.008)            |                |      |
| Lead spacing: MF-RX/250                                | F              | F              | 5.08<br>(0.2)    | -0.5/+0.6<br>(-.020/+0.024) |                |      |
| Reel width   | w              | W <sub>2</sub> | 56.0<br>(2.205)  | max.                        |                |      |
| Reel diameter  | d              | a              | 370.0<br>(14.57) | max.                        |                |      |
| Space between flanges less device                      | W <sub>1</sub> | h              | 4.75<br>(.187)   | ±3.25<br>(±.128)            |                |      |
| Arbor hole diameter                                    | f              | c              | 26.0<br>(1.024)  | ±12.0<br>(±.472)            |                |      |
| Core diameter: MF-R, MF-RX, MF-R/90                    | h              | n              | 80<br>(3.15)     | max.                        |                |      |
| Core diameter: MF-RX/250, MF-R/600                     | h              | n              | 91<br>(3.58)     | max.                        |                |      |
| Box: MF-R, MF-RX, MF-R/90                              |                |                | 56<br>(2.2)      | 372<br>(14.6)               | 372<br>(14.6)  | max. |
| Box: MF-RX/250   |                |                | 67<br>(2.64)     | 372<br>(14.6)               | 362<br>(14.25) | max. |
| Box: MF-R/600  |                |                | 64<br>(2.52)     | 372<br>(14.6)               | 362<br>(14.25) | max. |
| Consecutive missing places: MF-R, MF-RX, MF-R/90       |                |                | 3                | max.                        |                |      |
| Consecutive missing places: MF-RX/250, MF-R/600        |                |                | none             |                             |                |      |
| Empty places per reel: MF-R, MF-RX, MF-R/90            |                |                |                  |                             | Not specified  |      |
| Empty places per reel: MF-RX/250, MF-R/600             |                |                |                  |                             | 0.1 %          |      |

**Taped Component Dimensions - Figure 1**



**Reel Dimensions - Figure 2**



Specifications are subject to change without notice.  
Customers should verify actual device performance in their specific applications.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.